

Biological Analysis Report

SE-DIST-2017-07-13-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Overflow Analyses Performed By:
Flowers Chemical Laboratories Inc.
571 NW Mercantile Pl. Ste. 111
Port St. Lucie, FL 34986
DOH Accreditation E86562

Event Description: **SMP-G2 Jupiter Run**
Request ID: **RQ-2017-06-19-19**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
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2199 South Rock Road
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Certified by: Jennifer Walters, Environmental Manager

Date Certified: 31-AUG-2017 18:44



Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Chlorophyll/Grain Size/BOD, Molecular and Overflow.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: C-24 @ PSL BLVD.

Collection Date/Time: 07/12/2017 10:10

Field ID: G2SE0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1913237	SM 10200 H (mod.)	Chlorophyll-a, Corrected	14		ug/L	P328744	
		Phaeophytin-a	6.0		ug/L	P328744	
		Chlorophyll/Phaeophytin Ratio	1.5			P328744	
		Chlorophyll-a, Uncorrected	18		ug/L	P328744	
1913241	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1913248	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	18.1		MPN/100 mL		

Sample Location: SW FORK LOX @ CENTRAL BLVD.

Collection Date/Time: 07/12/2017 11:30

Field ID: G2SE0023

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1913235	SM 10200 H (mod.)	Chlorophyll-a, Corrected	11		ug/L	P328744	
		Phaeophytin-a	2.1		ug/L	P328744	
		Chlorophyll/Phaeophytin Ratio	1.6			P328744	
		Chlorophyll-a, Uncorrected	13		ug/L	P328744	
1913239	SOP-PCR-1.0	HF183-qPCR**	71	U	GEU/100 mL	P329340	
	SOP-PCR-1.2	GULL2-qPCR**	3.8E+03	T	TSC/100 mL	P329340	RPD
	SOP-PCR-1.4	BacR-qPCR**	760	U	TSC/100 mL	P329340	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1913244	Enterolert/QT	Enterococci-Quanti-Tray	211		MPN/100 mL		
1913246	SM 9222 D	Fecal Coliforms-Membrane Filter	88.0		cfu/100 mL		

Ref. Method and Comment:

SOP-PCR-1.0: No amplification of HF183 marker.

SOP-PCR-1.4: No amplification of BACR marker.

Sample Location: TIDAL CREEK TO LOX

Collection Date/Time: 07/12/2017 11:50

Field ID: G2SE0027

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1913234	SM 10200 H (mod.)	Chlorophyll-a, Corrected	5.7		ug/L	P328744	
		Phaeophytin-a	1.3		ug/L	P328744	
		Chlorophyll/Phaeophytin Ratio	1.6			P328744	
		Chlorophyll-a, Uncorrected	6.7		ug/L	P328744	
1913238	SOP-PCR-1.0	HF183-qPCR**	15	T	GEU/100 mL	P328342	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1913243	Enterolert/QT	Enterococci-Quanti-Tray	62.0		MPN/100 mL		

Sample Location: NORTH FORK LOX @ COUNTY LINE

Collection Date/Time: 07/12/2017 13:00

Field ID: G2SE0021

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1913236	SM 10200 H (mod.)	Chlorophyll-a, Corrected	17		ug/L	P328744	
		Phaeophytin-a	2.2		ug/L	P328744	
		Chlorophyll/Phaeophytin Ratio	1.6			P328744	
		Chlorophyll-a, Uncorrected	19		ug/L	P328744	
1913240	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Field ID: G2SE0021

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1913245	Enterolert/QT	Enterococci-Quanti-Tray	41.0		MPN/100 mL		
1913247	SM 9222 D	Fecal Coliforms-Membrane Filter	28.0	B	cfu/100 mL		

Sample Location: NORTH FORK UPPER LOX

Collection Date/Time: 07/12/2017 13:40

Field ID: G2SE0020

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1913233	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.8		ug/L	P328744	
		Phaeophytin-a	0.61	I	ug/L	P328744	
		Chlorophyll/Phaeophytin Ratio	1.6			P328744	
		Chlorophyll-a, Uncorrected	3.3		ug/L	P328744	
1913242	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	14.5		MPN/100 mL		

Quality Assurance Report
Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P328744

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.55	U	ug/L
Chlorophyll-a, Uncorrected	0.40	U	ug/L
Phaeophytin-a	0.40	U	ug/L

Reference Method: SOP-PCR-1.0
Batch ID: P328342

Component	Result	Code	Units
HF183-qPCR	280	U	GEU/100 mL

Reference Method: SOP-PCR-1.0
Batch ID: P329340

Component	Result	Code	Units
HF183-qPCR	280	U	GEU/100 mL

Reference Method: SOP-PCR-1.2
Batch ID: P329340

Component	Result	Code	Units
GULL2-qPCR	1.7E+04	U	TSC/100 mL

Reference Method: SOP-PCR-1.4
Batch ID: P329340

Component	Result	Code	Units
BacR-qPCR	3.0E+03	U	TSC/100 mL

Quality Assurance Report
Laboratory Control Sample Accuracy

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P328744

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	106		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P328342

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	117	72.3	P/P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P329340

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	96.2	61.2	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P329340

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	81.3	125	P/P	50 - 300

Reference Method: SOP-PCR-1.4
Batch ID: P329340

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	84.9	58.2	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P328342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905621	HF183-qPCR	101		P	50 - 175
1905622	HF183-qPCR	113		P	50 - 175
1905625	HF183-qPCR	83.7		P	50 - 175
1906223	HF183-qPCR	114		P	50 - 175
1910229	HF183-qPCR	111		P	50 - 175
1910583	HF183-qPCR	90.7		P	50 - 175
1912962	HF183-qPCR	92.0		P	50 - 175
1912963	HF183-qPCR	74.0		P	50 - 175
1913038	HF183-qPCR	129	112	P/P	50 - 175
1913039	HF183-qPCR	94.6		P	50 - 175
1913238	HF183-qPCR	82.3		P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P329340

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1913239	HF183-qPCR	84.6		P	50 - 175
1913605	HF183-qPCR	102		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P329340

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917258	HF183-qPCR	85.4		P	50 - 175
1917259	HF183-qPCR	91.7		P	50 - 175
1917377	HF183-qPCR	86.1	82.4	P/P	50 - 175
1917378	HF183-qPCR	85.6		P	50 - 175
1917379	HF183-qPCR	93.4		P	50 - 175
1917380	HF183-qPCR	81.9		P	50 - 175
1917501	HF183-qPCR	76.7		P	50 - 175
1917832	HF183-qPCR	79.0		P	50 - 175
1918795	HF183-qPCR	82.1		P	50 - 175
1918796	HF183-qPCR	86.2		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P329340

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1913239	GULL2-qPCR	78.0		P	50 - 300

Reference Method: SOP-PCR-1.4
Batch ID: P329340

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1913239	BacR-qPCR	104		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P328744

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1913293	Chlorophyll/Phaeophytin Ratio	0.0	Sample	P	0 - 25
1913293	Chlorophyll-a, Corrected	5.83	Sample	P	0 - 25
1913293	Chlorophyll-a, Uncorrected	4.82	Sample	P	0 - 25
1913293	Phaeophytin-a	1.66	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P328342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1913038	HF183-qPCR	13.9	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P329340

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917377	HF183-qPCR	4.44	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.2
Batch ID: P329340

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918018	GULL2-qPCR	37.8	Spike	F	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P329340

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917377	BacR-qPCR	6.85	Spike	P	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 1913238
Field Sample ID: G2SE0027

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	102	P	50 - 300

Lab Sample ID: 1913239
Field Sample ID: G2SE0023

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	78.9	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	104	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	110	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	110	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll/Phaeophytin Ratio							0.0	
	Chlorophyll-a, Corrected	106						5.83	
	Chlorophyll-a, Uncorrected							4.82	
	Phaeophytin-a							1.66	
SOP-PCR-1.0	HF183-qPCR	72.3	117	92.0	74.0	129			13.9
	HF183-qPCR	61.2	96.2	91.7	86.1	82.4			4.44
				85.6					
SOP-PCR-1.2	GULL2-qPCR	125	81.3	78.0					37.8
SOP-PCR-1.4	BacR-qPCR	58.2	84.9	104					6.85

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
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Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E86562	Enterococci by Enterolert Quanti-Tray method by Flowers Overflow Laboratory for Southeast District	1913243, 1913244, 1913245
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1913233, 1913234, 1913235, 1913236, 1913237
SM 9222 D / E86562	Fecal coliforms by membrane filter method by Flowers Overflow Laboratory for SED	1913246, 1913247
SM 9223 Quanti-Tray / E86562	Escherichia coli by Colilert 18 Quanti-Tray method by FlowersOverflow Laboratory for Southeast District	1913242, 1913248
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1913238, 1913239
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1913239
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1913239
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1913238, 1913239, 1913240, 1913241

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	07/12/2017			07/12/2017 17:05	Flowers-PSL	1913243, 1913244, 1913245
SM 10200 H (mod.)	07/13/2017	07/13/2017 12:50	Morgan Lane	07/18/2017	Jennifer Mihalic	1913233, 1913234, 1913235, 1913236, 1913237
SM 9222 D	07/12/2017			07/12/2017 15:40	Flowers-PSL	1913246, 1913247
SM 9223 Quanti-Tray	07/12/2017			07/12/2017 17:20	Flowers-PSL	1913242, 1913248
SOP-PCR-1.0	07/13/2017	07/13/2017 14:00	Avril Wood	08/08/2017	Puja Jasrotia	1913239
	07/13/2017	07/13/2017 14:00	Sarah Menz	07/18/2017	Puja Jasrotia	1913238
SOP-PCR-1.2	07/13/2017	07/13/2017 14:00	Avril Wood	08/14/2017	Sarah Menz	1913239
SOP-PCR-1.4	07/13/2017	07/13/2017 14:00	Avril Wood	08/10/2017	Sarah Menz	1913239
SOP-PCR-4.0	07/13/2017	07/13/2017 14:00	Avril Wood	08/03/2017	Puja Jasrotia	1913238, 1913239, 1913240, 1913241